

Wisconsin Asthma Questionnaire
Work-Related Asthma Survey
Final Report
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by
Meredith Lins, Occupational Health Nurse
Dr. K.M. Monirul Islam, Epidemiologist
Wisconsin Division of Public Health
Bureau of Environmental and Occupational Health

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- WEAC
- UAW (United Auto Workers)
- International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers
- International Association of Machinists and Aerospace Workers
- United Steel Workers of America
 - Burlington
 - Elkhorn
 - Mayville
 - Milwaukee
 - New London
 - Pembine

Background Information

Little is known about the incidence or prevalence of work-related asthma (new and chronic asthma cases which are aggravated by occupational exposures) among Wisconsin workers. The Wisconsin Division of Public Health did not have Wisconsin-specific information regarding industries with higher rates of work-related asthma. Without such information it is difficult to effectively target work-related asthma education and intervention efforts.

The National Institute for Occupational Safety and Health (NIOSH) estimates that asthma currently affects more than 10 million individuals in the United States and recent research suggests that as many as 15% of adult asthma cases could be related to work. Further, reports suggest that the total numbers of asthma are increasing and many new asthma sensitizers are being identified in the workplace.

To address asthma in Wisconsin, the Department of Health and Family Services, with funding from the Centers for Disease Control, established the Wisconsin Asthma Program. The Program has partnered with stakeholders both inside and outside the agency to develop the Wisconsin Asthma Coalition and the State Asthma Plan. As part of the coalition, the Work-Related Asthma Workgroup was formed in addition to several other workgroups. One of the projects the Work-Related Asthma Workgroup established was the development of the Wisconsin Asthma Questionnaire to determine the prevalence of work-related asthma in Wisconsin. This report summarizes the findings of the Work-related asthma survey of unions throughout Wisconsin.

Methods

The work-related asthma workgroup created the Wisconsin Asthma Questionnaire based on asthma surveys identified via a literature review and current data needs. Due to limited funding, Wisconsin unions were selected as a means to collect information from a population of workers. Various unions were contacted to request their participation. The questionnaires were distributed to union members from those unions that agreed to participate. Participation by union members was strictly voluntary.

Each union that agreed to participate by completing the questionnaires estimated the number of questionnaires they expected to utilize. The agreed upon number of questionnaires and envelopes (for privacy) were distributed to a union contact at each of the unions. After the questionnaires were received, the union contacts either distributed them to their workers directly or through their respective union stewards. The stewards collected the completed questionnaires and returned them to the union contact person. The work-related asthma workgroup chairperson obtained them from each union contact person.

Due to the process utilized at the majority of sites, the questionnaires were not administered simultaneously by one individual. The union members received the questionnaire either at a meeting or in their individual mailboxes. At one of the sites, individuals voluntarily completed a form and submitted it before leaving the area. At the other sites, the work-related asthma workgroup relied on the participating union individuals returning the completed questionnaires to either a steward, the main union contact or mailing them to the Wisconsin work-related workgroup chair. The latter was at the union member's own expense, as funds did not allow for postage.

The Wisconsin Asthma survey was distributed beginning in October 2003, when 770 questionnaires were completed at the Wisconsin Education Association Council (WEAC) convention. The work-related asthma chairperson continued to talk with union groups to solicit their cooperation and began distributing additional questionnaires in December. The last group that agreed to participate received the questionnaires in February 2004. This group submitted the completed questionnaires in March 2004.

A total of 8,650 questionnaires were delivered to the following unions:

- WEAC
- UAW (United Auto Workers)
- International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers
- International Association of Machinists and Aerospace Workers
- United Steel Workers of America (6 locations)

Contacts and Stewards distributed a total of 7,108 of the 8,650 questionnaires to their union members. A total of 1,837 (25.8%) participants completed responses. The completed questionnaires were individually scanned and the raw data were then analyzed.

The following case definitions were used to identify reported asthma, Work-Related Asthma (WRA) and smoking status of the participant who completed the Wisconsin Asthma Questionnaire.

Asthma:

- a. If the participant answered the question: “During the past 12 months, how often have you had respiratory problems such as coughing, wheezing, shortness of breath or chest tightness” with any of the following choices: Less than once a month; 1-2 times a month; More than 2 times a month, but not every week; Every week, but not every day; or Every day or almost every day; AND
- b. The question: “Did the doctor or other medical professional ever tell you that you have asthma” and the choice Yes-still have asthma.

Work-Related Asthma:

- a. Participants meet the asthma case definition AND
- b. Answered the question: “Did a doctor or other medical professional ever tell you that your asthma was related to any job you ever had” by stating yes.

Smoking status was established from the questions “have you smoked at least 5 packs of cigarettes in your lifetime and “do you smoke cigarettes now”.

Results

The primary goal of the survey was to estimate the prevalence of work-related asthma (WRA) in Wisconsin. The response rate to the WRA survey was 25.8% (1,837 completed questionnaires were returned of the 7,108 questionnaires that were distributed).

According to the case definition, 191 (10.8%) participants met asthma criteria and 26 (1.4%) met WRA diagnosis criteria. The remaining 165 (9%) asthma cases that did not meet the WRA case definition were categorized non-work-related asthma (NRWA). The WRA rate was 13.61% among the reported asthma population (persons who meet the asthma case definition).

The mean age of the participant population was 45 years. Forty two percent (42%) of the participants were female and 57% were male. More than 91% of the participants were white and 4.4% were African Americans. “Other” races in this report include the American Indian, Alaskan natives, Asian Pacific Islanders and the reported unknown race category. About 1% indicated multi-racial background. Most of the participants were non-Hispanic (95.6%) ethnic origin.

Table-1: Demographic Characteristics of the Survey Participants.

	Participants (N=1837)	Asthma (n=191)	WRA (n=26)	NWRA (n=165)	No Asthma (n=1646)
<i>Gender</i>	n (%)	n (%)	n (%)	n (%)	n (%)
Male	1,051 (57.9)	81 (42.4)	13 (50.0)	68 (41.2)	970 (59.7)
Female	764 (42.1)	110 (57.6)	13 (50.0)	97 (58.8)	654 (40.3)
<i>Ethnicity</i>					
Hispanic	69 (3.8)	12 (6.4)	2 (8.3)	10 (6.1)	57 (3.5)
Non-Hispanic	1,717 (95.6)	176 (93.6)	22 (91.7)	154 (93.9)	1541 (95.8)
Don't know/Unsure	10 (0.6)	-	-	-	10 (0.6)
<i>Race</i>					
White	1,627 (91.1)	169 (90.9)	23 (88.5)	146 (91.3)	1,458 (91.1)
African American	78 (4.4)	8 (4.3)	-	8 (5.0)	70 (4.4)
Multi-racial	35 (1.0)	1 (0.5)	-	1 (0.6)	17 (1.1)
Other	46 (3.5)	8 (4.3)	3 (11.5)	5 (3.1)	55 (3.4)
<i>Age in years</i>					
Mean age at survey	44.7	41.6	48.5	40.5	45.1
Mean age at first diagnosis of asthma	-	25.9	40.3	23.8	17.4

The mean age of those with asthma was 42 years, while the mean age of WRA was 49 years and the mean age of NWRA was 41 years. The racial distribution of the survey participants, asthma and NWRA were similar with no significant differences. But the “Other” race had higher (11.5%) WRA compared to the rest of the groups. Of the participants with reported asthma diagnosis, more women reported that they had asthma (women 57.6% vs. men 42.4%) and NWRA (women 58.8% vs. men 41.2%). The WRA was distributed evenly between men and women (50%). The reported WRA increased

when the participants were “Other” race and Hispanic ethnicity. The mean age of the participants with reported asthma was 26 years when they were first diagnosed with asthma, while the mean age of those diagnosed with WRA was 40 years.

Table-2: The Employment and Smoking Status of the Survey Participants.

Variable	Participants (N=1837)	Asthma (n=191)	WRA (n=26)	NWRA (n=165)	No Asthma (n=1646)
<i>Employment Status</i>	n (%)	n (%)	n (%)	n (%)	n (%)
Employed	1,718 (95.6)	181 (95.3)	22 (88.0)	159 (96.4)	1,537 (95.6)
Retired	32 (1.8)	3 (1.6)	1 (4.0)	2 (1.2)	29 (1.8)
Retired and Working	18 (1.0)	1 (0.5)	-	1 (0.6)	17 (1.1)
Unemployed	22 (1.2)	3 (1.6)	-	3 (1.8)	19 (1.2)
Retired or currently off work due to work or non-work Disability	7 (0.4)	2 (1.1)	2 (8.0)	-	5 (0.3)
<i>Smoking Status</i>					
Smoker	857 (46.7)	66 (34.5)	10 (38.5)	56 (33.9)	791 (48.1)
Not smoker	980 (53.4)	125 (65.5)	16 (61.5)	109 (66.1)	855 (51.9)

The survey questionnaire was distributed to volunteer employee unions. More than 95% of the participants were employed individuals. Among the WRA, 88% were employed individuals. Survey participants had higher smoking rates compared to claimed asthma, WRA and NWRA group (Table-2).

When the participants were asked, “what do you think makes your breathing worse?” More than 50% of the survey participants identified dust, smoke and fumes as responsible for making their breathing worse at their work place. Another 18% reported poor ventilation, 13% reported chemicals, vapor, gas and the rest of the participants reported non-specific substances making their breathing worse at work place.

Table-3: The Environment, Industries and Use of Respirator.

Variable	Participants (N=1837)	Asthma (n=191)	WRA (n=26)	NWRA (n=165)	No Asthma (n=1646)
<i>Smoke-Free Environment</i>	n (%)	n (%)	n (%)	n (%)	n (%)
Yes	1,187 (66.8)	139 (73.5)	16 (61.5)	123 (75.5)	1,048 (65.9)
No	591 (33.2)	50 (26.5)	10 (38.5)	40 (24.5)	541 (34.1)
<i>Type of Industries</i>					
Manufacturing	945 (53.1)	73 (38.6)	14 (56.0)	59 (35.9)	872 (54.8)
Services	757 (42.5)	110 (58.2)	10 (40.0)	100 (60.9)	647 (40.6)
Other Industries	79 (4.4)	6 (3.2)	1 (4.0)	5 (3.1)	73 (4.6)
<i>Use of Respirator</i>					
Used	340 (19.0)	33 (17.8)	14 (56.0)	23 (14.4)	307 (19.2)
Not Used	1,385 (77.5)	146 (78.9)	10 (40.0)	132 (82.5)	1239 (77.3)
Not Applicable	62 (3.5)	6 (3.2)	1 (4.0)	5 (3.1)	56 (3.5)

More than two thirds (67%) of the survey participants worked in a smoke free environment. Nineteen percent (19%) of the participants used a respirator at work while

20% of those with asthma and 56% with WRA used a respirator. Among the asthma population, 58% worked in service industries and 39% worked in manufacturing industries. Forty percent (40%) of WRA population worked in service industries and 56% worked in manufacturing industries. NWRA population had similar industry profile as that of asthma population.

Further statistical analysis of the Wisconsin WRA survey data showed that smoke-free environment, service industry and use of respirators were important factors in determining WRA. When considering all the factors that includes gender, race, smoking status, industry type and smoke-free environment, the survey data showed more than 50% higher chance that those who reported WRA used a respirator. This could be due to the fact that the survey participants already had asthma and therefore they were more likely to use a respirator or it could be that the environment was contributing to WRA.

Conclusion

The estimated asthma prevalence rate among the participating union workers was 10.8% and WRA prevalence rate in Wisconsin was 1.4%. WRA prevalence rate among reported asthma population was 13%. The Wisconsin WRA survey results are comfortable with the estimates of the Behavior Risk Factor Surveillance System (BRFSS). In 2003, the BRFSS estimated 10.9% asthma and 4.9% WRA prevalence rate in Wisconsin. The National Institute for Occupational Safety and Health (NIOSH) estimated that 9% -15% of adult asthma is work related. The survey data showed that more women had asthma. Older participants with “other” racial background had higher WRA. WRA was distributed equally between men and women. The smoking prevalence rates among asthma (34.6%) and WRA (38.5%) were lower than the Wisconsin general population smoking prevalence rate (49%; 2003 BRFSS data). More than two thirds of the surveyed participants worked in a smoke-free environment and about 80% of the participants did not use a respirator in the work place.